Connecticut Botanical Society

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POSITION PAPER ON RIGHT-OF-WAY VEGETATION MANAGEMENT
Supplement to the paper by Dr. Robert Askins
Provided to Eversource

1.0 Introduction

In recent years, ecologists working in North America and Europe have found that powerline corridors, once considered detrimental to biodiversity, in fact supply important habitat for many species, including rare species (e.g., Wagner et al. 2014). In his position paper, *Assessment of Changes in Vegetation Management on Powerline Corridors in Connecticut* (2019), Dr. Robert Askins eloquently described the successful strategy of creating stable, diverse shrub communities to prevent damage to powerline habitat, through selective culling of tree saplings, and explained why early successional habitat has been in such decline statewide.

In this addendum to Dr. Askins' paper, the Connecticut Botanical Society explains additional ecological benefits of the selective culling strategy and other alternative vegetation management, especially when accompanied by a dirt access roadway. We offer suggestions as to how to balance safety and ecological considerations.

Two attached tables illustrate our points. Table 1 is an inventory of a typical diverse plant community on a rocky Eversource Right-of-Way (ROW) section west of Lambtown Road in Groton and Ledyard and owned by the Groton Open Space Association (GOSA). Table 2 shows that a high percentage of state-listed "NDDB" species occur on ROW habitats.

2.0 Soil Evaluation along Access Routes

The current Eversource practice to access utility structures for repair and maintenance is to lay heavy gravel along access roads and under poles. At issue is the need for service vehicles to efficiently and safely access these areas. All are in agreement here. However, it would conserve significant biodiversity and likely reduce maintenance costs over the long term to systematically evaluate the existing soil conditions to determine the need for gravel. We suggest using soil and topographic maps, and a review of past maintenance notes with follow-up field scouting to limit gravel application to the locations where it really is needed. This would: 1) identify specific areas of roadbed that truly need extra support, e.g. areas of soft, moist soils, prone to rutting and miring; 2) identify areas where existing dirt roads are firm, well-drained or with a natural base of shallow bedrock, such that maintenance of access roadbeds could safely be limited to occasional mowing; and 3) identify areas where graveled access roadways could be shifted laterally to avoid soft soil, wetlands, and high quality vegetation. Only limited gravel has been placed along the GOSA ROW stretch with bedrock near the surface and firm soil, and the plant community still has high bio-diversity.

At the February 22, 2019 meeting organized by the CT Botanical Society's Ecology & Conservation Committee, a key point was made about the importance of exposed soil for certain life stages of insects, including pollinators. Such areas are also "safe sites" for seed germination and seedling establishment of many kinds of plants, including those used by pollinators and as food plants for many other kinds of insects (Grubb 1977). They are also basking sites for cold-blooded fauna, which prey on small herbivores. We strongly agree with Dr. Askins' statement on p. 6 of his position paper that "it would help if dirt roads could be retained in areas with dry, stable soils" and that "conservation of a diversity of grasses, wildflowers and pollinating insects could be accomplished most effectively by managing some sections of power line corridors to favor herbaceous plants instead of shrubs." According to the CT DEEP Comprehensive Wildlife Habitat Action Plan, both meadow and shrublands are priority, declining habitats, required by declining wildlife species (CT DEEP 2015).

3.0 Herbaceous ROW Communities

ROW habitats with sparse vegetation and patches of bare soil are important for a large suite of "r" strategist plants in Connecticut. Early-successional herbaceous species that are poor competitors, but effective colonizers, are termed "r" species by ecologists (Krebs 2009). Black-eyed Susan (*Rudbeckia hirta*) is a common example, and state-threatened purple milkweed (*Asclepias purpurascens*) is a rare one. They persist in many ROW sections with bare soil patches due to the stressful conditions on thin, shallow-to-bedrock soils, or very sandy soils.[1] Insects that feed on a variety of herbaceous species also thrive in these areas. An example is *Agrotis stigmosa*, the spotted dart moth, a Special Concern noctuid moth; 40 percent of its documented NDDB occurrences in Connecticut have been in ROW habitats. Saplings and trees also grow very slowly in these habitats.

ROW's with dirt access roads are strips of open habitat that are intermittently disturbed and repeatedly colonized by native "r" plant species, including rare ones, provided seed sources are reasonably nearby. Bare soil is generated by occasional truck traffic, roadside trimming, and in gaps created by sapling culling. When the soil is exposed, and sunshine raises soil temperatures, seeds may also sprout from a persistent seed bank. Denslow (1985) and Collins et al (2001) elucidated the role of disturbances of intermediate frequency and intensity enhancing seedling establishment, and maintaining biodiversity of meadow communities. A recent large-scale study in Germany recently corroborated this process. (Klaus et al 2017)

Along such a ROW, occurrences of a plant species are likely to be close enough together to form a genetically healthy, interbreeding metapopulation, large enough to support populations of rare or uncommon specialist insect species. For example, a robust ROW populations of native little blue stem grass (*Schyzachyrium scoparium)* is often the larval host for declining and/or rare species of skipper butterflies; however, small, widely scattered patches of bluestem in largely manicured suburban areas do not support these skippers.

[1] Vegetation is similar to that in "Little Bluestem-Poverty Oat Grass" grasslands, characteristic of bedrock summits and sandy eskers, as described in the Metzler-Barrett Classification (2006).

4.0 Alternative ROW Substrates and Invasive Plant Colonization

Extensive layers of wood chips or gravel, and close mowing are not compatible with ecological communities such as those described in Section 3.0. Bare soil and natural leaf/grass litter are valuable habitat components, for both invertebrate & vertebrate fauna, much more so than wood chips or gravel. Not only do these practices eliminate large areas of diverse habitat that may well contain state-listed rare species, these practices are also counter-productive to managing invasives. In particular, common mugwort readily colonizes gravel and wood chips, and occasionally mowed turf; it is one of the most pernicious and difficult to control invasives. Historically, maintaining dense shrub cover with selective basal herbicide treatment of tree species has kept invasive colonization to a low level along many ROW stretches, and prevented build-up of major invasive seed sources.

Wood chips release substantial dissolved, leachable phosphorus as they decompose (Kutch 2017). Thick wood chip piles may release acidic leachate, with toxic phenols and high chemical oxygen demand (COD) (J. Rex 2016). This encourages invasive species with high nutrient needs, kills seedlings, and threatens nearby streams. Note that selective sapling culling does not generate large volumes of wood chips. Saplings and branches, left intact on the ROW can be a useful habitat component, serving as a substrate for mosses, lichens, and fungi, and as cover for wildlife.

Thick compact gravel not only smothers native plant communities, but it is most readily colonized by undesirable invasive species such as mugwort. We advise restraint, in the quantities of gravel used, and the width of access roads, as has been done along the Eversource ROW segment west of Lambtown Road in Groton and Ledyard.

5.0 Evaluation of ROW Ecological Communities

Evaluation of existing ecological communities in different ROW segments would inform decisions about appropriate vegetation management. For example, which sections have concentrations of NDDB plant species, key larval host plants, or populations of declining birds? Such evaluation would also allow invasive seed sources to be identified and proactively controlled, reducing future maintenance expenses.

In rocky areas with sparse, diverse herbs, selective weed-whacking (timed to avoid sensitive life stages) can keep an access road open and prevent seed dispersal by pioneer invasive mugwort patches. Selective culling of tree saplings (with basal herbicide application) can continue to prevent damage to power lines by trees. Slow-growing red cedars could be topped every ten years, as an alternative to removal.

Areas with deeper, more fertile soils could be managed as dense stable shrub thickets by selective tree culling. Or they could be managed as dense wildflower meadows for pollinators, probably dominated by goldenrods, by mowing every three or four years.

We suggest comprehensive de novo inventories for rare and uncommon communities/critical habitats and rare species not already documented in the CT NDDB. Field surveys conducted by professional botanists and CBS members indicate that the actual occurrences of rare plants and critical habitat are, on average, several times the extent of known occurrences. These areas need to be identified and protected.

Could it be helpful or appropriate for the naturalist community to offer to contribute data to the ecological evaluation process, and help with training Eversource personnel to ID woody vegetation? Although the scope of the data needed is well beyond what could be carried out on a volunteer basis, volunteers with expertise and long standing first-hand knowledge of a particular stretch, could make valuable contributions.

6.0 Conclusion

In conclusion, CBS encourages Eversource to continue and refine past vegetation management practices, making adjustments to meet the new safety and operational requirements, so as to preserve the valuable, diverse ecological communities that have been created along a high percentage of ROWs. A diverse plant community provides wildlife with assorted food, nectar, and pollen sources, as well as cover in different seasons. Even leaf-eating insects are more abundant on tender, fast growing new shoots in early-successional vegetation, than on older tougher leaves in a shaded forest. We hope that ROW land owners and natural resource non-profits will help Eversource assess ROW stretches, to plan practical, site-specific, and ecologically sound management plans.

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Attachments:

Table 1. List of Vascular Plant Species on an Eversource ROW Section in Groton and Ledyard.
Table 2. List of CT NDDB Species of ROW Habitats, with Percent Occurrence in this Habitat

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